

The genus *Erebia* (Lepidoptera: Nymphalidae) in the Central Balkan National Park, Bulgaria

Alexi POPOV

Introduction

The genus *Erebia* (Nymphalidae: Satyrinae) comprises many representatives of the high-mountain fauna. They are significant from a zoogeographical point of view because many of them have restricted or disjuncted ranges. For that reason, the genus, which is very homogenous and undivided into subgenera, is the richest in species among the butterflies (Papilionoidea) in Europe. According to TOLMAN (1997) 46 species occur in Europe. The genus gives a characteristic picture of the Bulgarian high-mountain fauna, too. A good knowledge of the distribution of the species of *Erebia* in the national parks will afford an opportunity for evaluation of their conservation significance and for proposing steps for their protection.

Material

The high-mountain woodless zone of the Central Balkan National Park was studied in the course of two years. The park, founded in 1991, is a part of the Zlatishko-Tetevenska Mt, the Troyanska Mt and the Kaloferska Mt and covers an area with a length of 85 km and a surface of 73262 ha, 29182 ha of which is a woodless zone. The material (130 specimens) was collected by the author visiting the sites twice or once as follows: in June, July and August 1995 from Paskal Peak to Dobrila Peak and in July and August 1996 from Dobrila Peak to Mazalat Chalet. All the treated species of *Erebia* have one generation yearly and fly between June and September.

The material from the National Park in the collections of Nikolai Karnozhitsky (77 specimens) and Dr Stefan Bocharov (57 specimens), preserved in the National Museum of Natural History in Sofia, was revised. The specimens were identified but not published by their collectors and were checked by the present author. The names are abbreviated in the text: NK = N. Karnozhitsky, SB = Dr St. Bocharov.

Some specimens of *Erebia ottomana balcanica* were collected by Boyan Petrov. Information about a sample from Kozya Stena was provided by Stanislav Abadjiev. The material consists of 288 specimens in total.

Only data from publications with original information (localities, altitudes, subspecies) have been added from the literature. Most of these publications contain records from a small area of the Kaloferska Mt between the valleys of Stara Reka and Byala Reka where *Erebia* were collected in 1909 and 1911 by Alexander Drenowski, in 1928 by Krestju Tuleschkow, in 1932 by Adolf Binder, in 1933 by P. Haig Thomas, in 1962 by Otto Slaby, in 1969 by Zoltan Varga and Alexander Slivov and in 1985 by Frank Franke. Stoyan Beshkov has been active in the current decade in the same area and in the Troyanska Mt as far as Dermenka to the west as well as Krum Iwanov who was active in 1922 and 1923 only in the Troyanska Mt. All localities, original and published, are given with their present names. Here is a list of the localities with changed names (the new name is given first, the old name is mentioned in the brackets): Dermenka Chalet (= Dermenkaya Chalet), Dermenka Peak (= Dermenkaya Peak), Levski Peak (= Ambaritsa Peak), Golyam Kупen Peak (= Kupena Peak), Ravnets Chalet (= Komsomol Chalet), Balkanski Rozi Chalet (= the small chalet at Karlovo), Vasil Levski Chalet (= Yumrukchal Chalet), Zhaltets Peak (= Sarakaya Peak), Botev Peak (= Yumrukchal Peak, = Ferdinandov Vrah Peak), Golyam Kademlia Peak (= Triglav Peak), Mazalat Peak (= Zli Vrah Peak), Valcha Glava Peak (= Kurtbashitsa Peak), Mazalat Chalet (= Rositsa Chalet).

Acknowledgements

I wish to express my grateful thanks to my colleagues and friends Stanislav Abadjiev for the identification of some specimens and confirmation of my identifications and for information from one of his trips for butterflies collection and Boyan Petrov for a sample of *Erebia*. The investigations in 1995 and 1996 were carried out as part of the project on the invertebrate fauna of the woodless zone of the Central Balkan National Park organized by the Bulgarian-Swiss Biodiversity Conservation Programme.

List of the species

Erebia ligea herculeana Warren, 1931

Troyanska Mt: below Levski Peak, 1400 m, 5.8.1949, NK. Kaloferska Mt: Vasil Levski Chalet, 1450 m, 18.7.1996; Zhaltets Peak, 1500-1600 m, 17-20.7.1948 and 6-7.8.1949, NK; the ridge between Botev Peak and Mazalat Chalet, 11-15.7.1952, SB. 15 specimens altogether.

Known from Karlovo Gorge of the Stara Reka River (BURESCH & TULESCHKOW, 1929; GOLTZ, 1930; THOMAS, 1936), Ravnets Chalet (FRANKE, 1989) and between Kalofer and Botev Peak (DRENOWSKI, 1909) and further out, but near to the borders of the National Park from Zelenikovets (IWANOV, 1926) at an altitude of the localities between 800 m (DRENOWSKI, 1925) and 1600 m (DRENOWSKI, 1909). FRANKE (1989) localized Ravnets Chalet incorrectly in the Troyanska instead of in the Kaloferska Mt (as well as Ravnets Peak for *E. orientalis*, *E. medusa* and *E. alberganus phorcys*).

Concerning the subspecific determination of the population in the Stara Planina Range, GOLTZ (1930) indicated peculiarities of a race without naming it and FRANKE (1989) first reported specimens from the National Park as *E. ligea herculeana*.

***Erebia euryale euryale* (Esper, [1805])**

Zlatishko-Tetevenska Mt: Benkovski Chalet, 1550 m, 2.8.1995; Bratanitsa Peak, 2000 m, 2.8.1995; Vezhen Chalet, 1650 m, 1.8.1995. Troyanska Mt: Karchov Preslap, 1450 m, 20.7.1995; Kozya Stena Peak, 1600 m, 9.8.1997, St. Abadjiev; Dobrila Chalet, 1850 m, 20.7.1996; Levski Peak, 2000 m, 5.8.1949, NK; Krastsite Peak, 1800 m, 19.7.1996. Kaloferska Mt: Kostenurkata Peak, 1700 m, 19.7.1996; Vasil Levski Chalet, 17.7.1952, SB; Ravnets Peak, above 1800 m, 5.7.1950, SB; Zhaltets Peak, 1500-1700 m, 7-9.8.1949, NK; Botev Peak, above 2000 m, 5.7.1950, SB; Golyam Kademlia Peak, 15.7.1952, SB; Groba Peak, 1600-1700 m, 25.7.1996; Rosovatets Peak, 1800-1900 m, 25.7.1996; Valcha Glava Peak, 1600-1700 m, 25.7.1996; Mazalat Chalet, 17.7.1952, SB. 61 specimens altogether. A very common species.

Reported for the National Park from Kozya Stena (IWANOV, 1926) and Botev Peak (DRENOWSKI, 1909) at an altitude of 1600 m (DRENOWSKI, 1925) to 2100 m (DRENOWSKI, 1909). The data for the altitude of their occurrence in the Kalofer-Balkan after Drenowski were cited erroneously as 800-1100 m instead of 1800-2100 m by BURESCH and TULESCHKOW (1929).

According to WARREN (1936) the specimens from the Stara Planina Range, as well as all Bulgaria, belong to *E. euryale euryale* f. *syrmia* Fruhstorfer, 1909. Under such forms of other species of *Erebia* Warren interpreted distinct subspecies, for instance *E. alberganus ceto* f. *phorcys*. In this case however he noted expressly that f. *syrmia* occurs together with typical *E. euryale*. Therefore ABADJIEV (1993) was quite right in regarding *syrmia* as an infrasubspecific form only, although it was considered later by some other authors as a subspecies. Individual aberrations reported for the Kaloferska Mt are also *E. euryale* var. *euryaloides* Tengström, 1869 (DRENOWSKI, 1909) and *E. euryale* var. *ocellaris* Staudinger, 1861 (DRENOWSKI, 1912).

***Erebia orientalis orientalis* Elwes, 1900**

Zlatishko-Tetevenska Mt: Vezhen Peak, 2000 m, 2.8.1995. Troyanska Mt: Golyam Kupa Peak, 1900 m, 19.7.1996. Kaloferska Mt: Botev Peak, 2300 m,

8.8.1949, NK. 3 specimens altogether. The date of the last finding on Botev Peak - 8th August, registers the end of the flight period of the species in Bulgaria.

All published localities in the National Park are situated within a rather small territory marked out by the points of Botev Peak - Vasil Levski Chalet - Ravnets Peak - Ray Chalet - Botev Peak (DRENOWSKI, 1909; BURESCH & TULESCHKOW, 1929; BINDER, 1933; THOMAS, 1936; VARGA, 1972; VARGA & SLIVOV, 1977; FRANKE, 1989), in addition ABADJIEV (1995) made colour photographs of a female and a photo of the male genitalia of specimens collected between Levski Peak and Botev Peak. The altitude of the range in Stara Planina (2000-2200 m) cited by ABADJIEV (1993) is after BURESCH and TULESCHKOW (1929) and not after DRENOWSKI (1909; 1928). In fact this altitude varies between 1400 m (FRANKE, 1989) and 2200 m (BURESCH & TULESCHKOW, 1929). The date of collecting of the female photographed by ABADJIEV (1995, p. 118, pl. 13, fig. 9-10) needs correction, too. The true date is 19-21.7.1994 as on p. 134, fig. 20.

The first information (provided by DRENOWSKI, 1909; 1925; 1928) contains data for the simultaneous occurrence of the more common *E. epiphron* var. *orientalis* and the typical *E. epiphron* (Knoch, 1783) at the same place. But in reality the last taxon is not distributed in Bulgaria. DRENOWSKI (1925) also reported one individual form from the Kaloferska Mt - *E. epiphron* var. *nelamus* (Boisduval, 1828). All the other authors had considered *orientalis* as a subspecies of *E. epiphron* until ABADJIEV (1993) accepted the separation of *E. orientalis* as a distinct species. BESHKOV (1996) took the view that the population from Central Stara Planina belonged to a distinct yet undescribed subspecies.

***Erebia aethiops aethiops* (Esper, [1777])**

Kaloferska Mt: the ridge between Botev Peak and Mazalat Chalet, 11-15.7.1952, SB; Mazalat Chalet, 17.7.1952, SB. 8 specimens altogether.

A rare species, established by BURESCH and TULESCHKOW (1929) on Zhaltets Peak above Vasil Levski Chalet and by DRENOWSKI (1909) above Kalofer towards Botev Peak between 800 m (DRENOWSKI, 1928) and 2000 m (BURESCH & TULESCHKOW, 1929).

***Erebia medusa psodea* (Hübner, [1804])**

Zlatishko-Tetevenska Mt: Vezhen Peak, the spring of Zavodna River, 2090 m, 21.7.1995; Kamenitsa Peak, 2070 m, 21.7.1995; Kavladan Peak, 1600 m, 15.6.1995. Troyanska Mt: Ushite Peak, 1600 m, 15.6.1995; Trionite, 1550 m, 15.6.1995; Markova Livada, 1550 m, 15.6.1995; Kozya Stena Chalet, 1600 m, 15.6.1995; Kozya Stena Peak, 1500 m, 14.6.1995; Balyovska Planinka, 1600 m, 14.6.1995; Troyanski Prohod Pass, 1500 m, 14.6.1995; Goraltepe Peak, 1500 m, 13.6.1995; Kartala Peak, 1500 m, 13.6.1995; Orlovo Gnezdo Shelter, 1500 m, 13.6.1995; west of Dermenka Chalet, 1550 m, 13.6.1995; Dermenka Peak, 1500 m, 12.6.1995. Kaloferska Mt: Zhaltets Peak, 1500 m, 20.7.1948 and 1700 m, 9.8.1949, NK; Botev Peak, above 2000 m,

5.7.1950, SB; Mazalat Chalet, 17.7.1952, SB. 31 specimens altogether. The specimens from Zhaltets Peak were identified erroneously by N. Karnozhitsky as *E. oeme spodia*. The very common *E. medusa* is found in the original material only in the western part of the National Park because it flies usually during the end of the spring and the beginning of the summer (earlier than the remaining species, except *E. euryale*) while the butterflies from the eastern part of the park between Dobrila Peak and Mazalat Chalet were collected by the author in 1996 past the middle of July. On rare occasions the imago occurs later. The date of a specimen from Zhaltets Peak (9th August) is the latest find of the species in Bulgaria.

All the published data for the National Park are from the western part of the Kaloferska Mt from 1000 m (DRENOWSKI, 1925) to 2100 m (ABADJIEV, 1995): above Karlovo (THOMAS, 1936), Ravnets Peak (FRANKE, 1989), between Vasil Levski Chalet and Botev Peak (BINDER, 1933) and above Kalofer towards Botev Peak (DRENOWSKI, 1909; BURESCH & TULESCHKOW, 1929; SLABY, 1979); furthermore ABADJIEV (1995) gives figures of a female with an unspecified locality „between Levski Peak and Botev Peak“.

The problem of the subspecific belonging of the populations from the Stara Planina Range and the Bulgarian populations as a whole has not been entirely clarified. SLABY (1979) described *E. medusa botevi* from Botev Peak. ABADJIEV (1993) wrote that *E. medusa botevi* Slaby, 1979 and *E. medusa euphrasia* Fruhstorfer, 1917 have been quoted for Bulgaria and accepted *E. medusa psodea* as a synonym of *E. medusa medusa* ([Denis et Schiffermüller], 1775). The populations of this species in Stara Planina (or those in the highest part of Central Balkan), occurring at the lowest altitude in Bulgaria among all *Erebia*, are not isolated from the other populations in the country and from a zoogeographical point of view they do not seem to represent a distinct subspecies. That is why we have taken TOLMAN's (1997) view here according to which *E. medusa psodea* (with synonyms *E. medusa euphrasia* and *E. medusa botevi*) occurs in southeastern Europe. In former publications the typical form of *E. medusa* together with *E. medusa* var. *psodea* (DRENOWSKI, 1909; 1925; 1928) or only var. *psodea* (BINDER, 1933) or an unnamed variety (THOMAS, 1936) was also reported for the Kaloferska Mt. Nevertheless it is not clear whether Drenowski regarded var. *psodea* as occurring in Stara Planina (DRENOWSKI, 1925, p. 51; 1928, p. 49) or as absent from it (DRENOWSKI, 1925, p. 115; 1928, p. 103).

***Erebia alberganus phorcys* (Freyer, 1836)**

Troyanska Mt: Trionite, 1550 m, 20.7.1995; Markova Livada, 1550 m, 20.7.1995; Kozya Stena Chalet, 1600 m, 20.7.1995; Kozya Stena Peak, 1600 m, 9.8.1997, St. Abadjiev; Kartala Peak, 1500 m, 18.7.1995; Orlovo Gnezdo Shelter, 1500 m, 18.7.1995; Dermenka Chalet, 1500 m, 17.7.1995. Kaloferska Mt: Zhaltets Peak, 1500 m, 17-20.7.1948, NK, 1700-1800 m, 6-9.8.1949, NK and 1800 m, 18.7.1996; Botev Peak, 25.7.1934, D. Zlatarsky and 2300 m, 22.7.1948, NK. 32 specimens alto-

gether. Quite common. The latest date of flying of the subspecies is 9th August (Kozya Stena Peak, Zhaltets Peak).

The subspecies was described from „Europäische Türkei“ (Freyer, 1836, after WARREN, 1936). The description is one of the oldest published records of an insect species in the country. The whole hitherto known range of *E. alberganus phorcys*, i.e. the whole range of *E. alberganus* (de Prunner, 1798) in Bulgaria, comprises the Troyanska and Kaloferska Mts: Dermenka Chalet and Gerdeketepe Peak (BESHKOV, 1992), Golyam Kupen Peak (DRENOWSKI, 1925), above Karlovo (GOLTZ, 1930; THOMAS, 1936), Balkanski Rozi Chalet (DRENOWSKI, 1928), Vasil Levski Chalet (ABADJIEV, 1995), Zhaltets Peak (BURESCH & TULESCHKOW, 1929), Ravnets Peak (FRANKE, 1989), Ray Chalet (VARGA & SLIVOV, 1977), the western and southern slopes of Botev Peak (DRENOWSKI, 1928; BURESCH & TULESCHKOW, 1929; BINDER, 1933). The range is situated between 900 m (HIGGINS & RILEY, 1970, after Higgins' own sample, see THOMAS, 1936) and 2200 m (BURESCH & TULESCHKOW, 1929).

All authors had reported the species for Bulgaria (the Stara Planina Range) as the subspecies *phorcys*: DRENOWSKI (1909) and the later authors as *E. ceto* var. *phorcys*; GOLTZ (1930) as an unnamed race of *E. ceto* (Hübner, [1804]); WARREN (1936) as *E. alberganus ceto* f. *phorcys*; HIGGINS & RILEY (1970) and the later authors as *E. alberganus phorcys*.

***Erebia rhodopensis* Nicholl, 1900**

Troyanska Mt: Levski Peak, 2000 m, 5.8.1949, NK and 1950-2166 m, 20.7.1996. Kaloferska Mt: Botev Peak, 2400 m (!), 25.7.1934, D. Zlatarsky, 2300 m, 8.8.1949, NK, above 2000 m, 7.8.1947 and 2.7.1950, SB and 2300 m, 13.8.1996; Marinka Shelter, 15.7.1952, SB; Rosovatets Peak, 1800-1900 m, 25.7.1996. 43 specimens altogether. Very common. Dr St. Bocharov identified wrongly his material (from Botev Peak and Marinka) as *E. tyndarus*. One specimen was collected on Botev Peak on 2nd July, which is rather earlier than hitherto published data for the beginning of the flight on 21st July.

Known only from Botev Peak (DRENOWSKI, 1909) and the area between Vasil Levski Chalet and Botev Peak (BINDER, 1933) from 1800 m (DRENOWSKI, 1909) to 2376 m (BURESCH & POPOV, 1965).

Drenowski examined the variability of the species and reported for the Kaloferska Mt the individual forms described by him from the Rila Mt: var. *latofasciata* Drenowski, 1909, var. *tenuifasciata* Drenowski, 1909 (DRENOWSKI, 1909), var. *bachmetjevi* Drenowski, 1909 and var. *ocellata* Drenowski, 1923 (DRENOWSKI, 1923).

***Erebia cassioides kinoshitai* Beshkov, 1996**

Kaloferska Mt: Botev Peak, above 2000 m, 7.8.1947, 6.9.1949, 2.7.1950, SB and 2300 m, 13.8.1996; without exact locality, July 1932, NK. 20 specimens altogether. Quite common. Dr St. Bocharov's material was identified erroneously as *E. rhodopensis* and the only specimen of N. Karnozhitsky as *E. tyndarus balcanica*.

The flight of the species in Bulgaria has been proved up till now for the second half of July and the beginning of August. The information is being improved considerably by the new data and spans the period from 2nd July to 6th September.

The subspecies is described from the Troyanska and the Kaloferska Mts on type material from Levski Peak, Golyam Kupa Peak, Krastsite Peak and the triangle between the Zhaltets, Ravnets and Botev peaks at an altitude from 1780 to 2100 m (BESHKOV, 1995; 1996). The species was also recorded from Botev Peak by DRENOWSKI (1909) within a larger altitudinal range (1500-2200 m) as the typical form of *E. tyndarus* and by LORKOVIC (1957) as *E. cassioides macedonica*. Levski Peak is situated in the Troyanska Mt and not in the Kaloferska Mt as it was stated by BESHKOV (1995).

LORKOVIC (1957) placed the population in the Stara Planina Range, described later by Beshkov as a distinct subspecies, to the subspecies *macedonica* Buresch, 1919 and transferred this subspecies from *E. tyndarus* (Esper, [1781]) to *E. cassioides* (Reiner et Hohenwarth, 1792). Specimens of Drenowski from Botev Peak examined by Lorkovic indicate that DRENOWSKI's data (1909; 1912; 1925; 1928) for a typical *E. tyndarus* from Botev Peak referred to *E. cassioides*. The differences between *E. cassioides kinoshitai* from Central Balkan and *E. cassioides macedonica* from Rila Mts. and Pirin Mts. are not so wide as for instance between *E. alberganus phorcys* from Central Balkan and *E. alberganus alberganus* from the Alps. This is only natural because in *E. alberganus* the ranges of the subspecies are more widely separated (the belonging of the population in Macedonia is not discussed here), the vegetation and climatic conditions in both ranges differ more strongly and regardless whether the isolation had started earlier in time or not, the differentiation of both subspecies of *E. alberganus* had preceded the origin of the two subspecies of *E. cassioides* mentioned above.

***Erebia ottomana balcanica* Rebel, 1903**

Zlatishko-Tetevenska Mt: Paskal Chalet, 1500 m, 4.8.1995; between Benkovski Chalet and Eho Chalet, 1700-2000 m, 15.9.1995, B. Petrov. Troyanska Mt: Kozya Stena Peak, 1600 m, 9.8.1997, St. Abadjiev; Malak Kupa Peak, 1850 m, 19.7.1996; Golyam Kupa Peak, 1900 m, 19.7.1996; Krastsite Peak, 1800 m, 19.7.1996. Kaloferska Mt: Kostenurkata Peak, 1700 m, 19.7.1996; Zhaltets Peak, 1500-1800 m, 6-9.8.1949, NK and 1800 m, 18.7.1996; Yuzhen Dzhendem, the northwestern part of the reserve, 1800 m, 14.8.1996; above Rayski Skali, 2100 m, 13.8.1996; Botev Peak, 2200-2400 m (!), 25-26.7.1934, NK and D. Zlatarsky and above 2000 m, 7.8.1947, 6.9.1949, SB. 54 specimens altogether. Quite common. N. Karnozhitsky's material of *E. ottomana balcanica* and *E. cassioides kinoshitai* was identified as *E. tyndarus balcanica*, and Dr St. Bocharov's as *E. gorge* (Hübner, [1804]), a species not distributed in Stara Planina Range. The date of the butterflies collected by B. Petrov in the western part of the investigated area (15th September) traces the termination of the flight of *E. ottomana* in Bulgaria.

It has been hitherto reported in the National Park only from the triangle Botev Peak - Vasil Levski Chalet - Ray Chalet - Botev Peak (DRENOWSKI, 1909; BINDER, 1933; WARREN, 1936; VARGA, 1977; VARGA & SLIVOV, 1977) at an altitude of 1200 m (DRENOWSKI, 1925) to 2000 m (DRENOWSKI, 1909).

This taxon has been considered for a long time as a form or subspecies of *E. tyndarus* (DRENOWSKI, 1909 and later authors) until WARREN (1936) transferred it to *E. ottomana* Herrich-Schäffer, 1847, which has been accepted by the subsequent authors. The year of the description of *E. ottomana balcanica* by Rebel was interpreted in a different manner in the literature: as 1903 after VARGA (1977), as 1904 after ABADJIEV (1993) or erroneously as 1913 after HIGGINS & RILEY (1970) and BESHKOV (1996). According to ICZN, REBEL (1903) - preliminary description, and not REBEL (1904) - detailed description, should be accepted as an author and year of the subspecies. DRENOWSKI (1928, p. 85) reported some specimens from Central Balkan as belonging to *E. tyndarus* var. *dromus* Herrich-Schäffer, 1844 and did not include this form in the list of the butterflies from Stara Planina further down in the same publication (DRENOWSKI, 1928, p. 103). Now *dromus* is also interpreted as belonging to *E. tyndarus*, which does not occur in Bulgaria.

***Erebia pronoe fruhstorferi* Warren, 1933**

Kaloferska Mt: Yuzhen Dzhendem, the northwestern part of the reserve, 1700-1800 m, 14.8.1996; above Rayski Skali, 2200 m, 13.8.1996; Botev Peak, 2300 m, 13.8.1996. 6 specimens altogether.

A rare species, hitherto reported only by DRENOWSKI (1909) from Botev Peak at 1800-2000 m.

DRENOWSKI (1909; 1925; 1928) placed the material collected by him to the typical form of *E. pronoe* (Esper, 1780) and partly to the rarer *E. pronoe* var. *pitho* (Hübner, [1804]). Lately the population in the Stara Planina Range as well as all the Bulgarian populations are considered as *E. pronoe fruhstorferi* (ABADJIEV, 1993; BESHKOV, 1996).

***Erebia melas schawerdae* Fruhstorfer, 1918**

Kaloferska Mt: Zhaltets Peak, 1700 m, 7-9.8.1949, NK; Botev Peak, above 2000 m, 7.8.1947, SB and 2300 m, 13.8.1996; Mazalat Peak above Tazha Village, 1800 m, 27-28.8.1948 and 21.8.1949, SB. 15 specimens altogether.

Known from the area between Kalofer and Botev Peak (DRENOWSKI, 1909) and between Levski Peak and Botev Peak (ABADJIEV, 1995) from 900 to 2100 m.

The solution of the problem of the subspecific belonging of the Bulgarian populations necessitates their comparison with the great number of other isolated populations in the Balkan Peninsula. The first data from the Kaloferska Mt are for the occurrence of the typical form of *E. melas* (Herbst, 1796) and more often of *E. melas* var. *astur* Oberthür, 1884. This variety is regarded now as a subspecies of the related *E. lefebvrei* (Boisduval, 1828) distributed in the Iberian Peninsula.

Later on BURESCH (1921) corrected the opinion of Drenowski and placed the specimens from Botev Peak and the remaining Bulgarian material to *E. melas hercegovinensis* Schawerda, 1912, which was recognized by DRENOWSKI (1925; 1928; 1929; 1932). In his monograph WARREN (1936) mentioned the same subspecies as *E. melas leonhardi* f. *schawerdae* Fruhstorfer, 1918 with a synonym f. *hercegovinensis*. In the recent publications for Bulgaria (including those on the Stara Planina Range) the species is referred as *E. melas leonhardi* Fruhstorfer, 1918 (ABADJIEV, 1993; BESHKOV, 1996). Here we accept TOLMAN's (1997) view according to which *E. melas leonhardi* and *E. melas schawerdae* are distinct subspecies.

***Erebia oeme spodia* Staudinger, 1871**

The species is not presented in the collected or revised material. The specimens, identified as *E. oeme spodia* by N. Karnozhitsky, are in fact *E. medusa*.

Only DRENOWSKI (1909) has reported this species from the area below Botev Peak between 1500 and 1700 m (DRENOWSKI, 1925). Except in the National Park it has been also established in the Western Stara Planina Range on Kom Peak, but this locality is not marked off on ABADJIEV's map (1993, map 18).

It is published in the literature on Stara Planina as *E. oeme spodia*. DRENOWSKI (1925; 1928) was the only one reporting the occurrence at the same place of the typical form of *E. oeme* (Hübner, [1804]) together with var. *spodia*.

Conclusion

From all the 14 species of *Erebia* in Bulgaria, 12 species have been established in the Central Balkan National Park. They were reported for the area of Botev Peak already during the first year of exploration of the mountain by DRENOWSKI (1909) as 11 species, some of them different from the taxa in the later papers. Nevertheless, the information on the species distribution in the National Park is rather insufficient. The literature data on *Erebia* refer to localities situated only on the southern slopes of the westernmost part of the Kaloferska Mt between Stara Reka Valley and Byala Reka Valley where all the 12 species have been established and in the Troyanska Mt from where *E. euryale*, *E. alberganus phorcys* and *E. cassioides kinoshitai* have been published. The original material consists of 11 species - all except *E. oeme spodia*. As a result of the present investigation 5 species have been reported for the first time from the National Park for the Troyanska Mt and 4 species for the Zlatishko-Tetevenska Mt. The boundaries of the known ranges are extended westward for *E. rhodopensis* (to Levski Peak), *E. alberganus phorcys* (to Trionite), *E. orientalis orientalis* and *E. medusa psodea* (to Vezhen Peak), *E. euryale euryale* (to Benkovski Chalet) and *E. ottomana balcanica* (to Paskal Chalet), as well as eastward for *E. rhodopensis* (to Rosovatets Peak), *E. melas schawerdae* (to Mazalat Peak), *E. euryale euryale*, *E. aethiops*

aethiops and *E. medusa psodea* (to Mazalat Chalet). Four species from the Zlatishko-Tetevenska Mt, 8 species from the Troyanska Mt and 12 species from the Kaloferska Mt are known now. It may be expected that some more species will be found in Troyanska and Zlatishko-Tetevenska Mts because Al. Drenowski, N. Karnozhitsky and Dr St. Bocharov collected butterflies only to the east of Levski Peak and my collecting activity in Zlatishko-Tetevenska Mt was carried out under unfavourable weather conditions. Seven species: *E. orientalis orientalis*, *E. aethiops aethiops*, *E. alberganus phorcys*, *E. rhodopensis*, *E. cassioides kinoshitai*, *E. pronoe fruhstorferi* and *E. melas schawerdae* occur in the Stara Planina Range only in the National Park.

On the basis of the original material the data for the altitude of occurrence of most species in the Stara Planina Range are changed inconsiderably, as for instance those for *E. pronoe fruhstorferi*: from 1800-2000 m to 1700-2300 m. All species except *E. ligea herculeana* and *E. oeme spodia* come up to 2000 m. Seven species can be met in the highest part of the mountain (up to 2300 m): *E. orientalis orientalis*, *E. alberganus phorcys*, *E. rhodopensis*, *E. cassioides kinoshitai*, *E. ottomana balcanica*, *E. pronoe fruhstorferi* and *E. melas schawerdae*. After considering the available material the earliest dates of flight of *E. rhodopensis* and *E. cassioides*, as well as the latest dates of *E. cassioides*, *E. medusa* and *E. alberganus* in Bulgaria have been established.

Conservation status

On the basis of the field observations and the data from other examined materials some conclusions on the conservation status of the treated species can be made. *E. euryale euryale*, *E. medusa psodea* and to a certain degree also *E. ligea herculeana* in the forest belt are widespread and abundant. Only the highest part of the woodless zone between Levski and Botev peaks is inhabited by *E. rhodopensis* and *E. cassioides kinoshitai*, but their populations are stable and numerous. Like them *E. ottomana balcanica* is also a common and unthreatened taxon. It occurs in a large part of the National Park but not continuously. *E. alberganus phorcys* is also rather abundant and unlike *E. ottomana balcanica* it has been not established in the westernmost part of the investigated area so far. All the species mentioned above probably do not reduce their populations by slight variations of the environmental parameters owing to human interference. The remaining species have low population density and inhabit the highest parts of the three mountains (*E. orientalis orientalis*) or only the eastern part of the park in the Botev Peak area (*E. oeme spodia* partly in the forest belt and *E. pronoe fruhstorferi*) and between Zhaltets Peak and Mazalat Chalet (*E. melas schawerdae*, *E. aethiops aethiops*). Although there have not been visible changes in the habitats in the large parts of the park territories as a result of anthropogenous inter-

vention, observations on the quantitative fluctuations of these species in various years are desirable. This is of importance for *E. oeme spodia*, *E. orientalis orientalis* and *E. aethiops aethiops* in the first place and also for *E. pronoe fruhstorferi* and *E. melas schawerdae* in a less degree. Only *E. rhodopensis* has been protected in Bulgaria by law so far. Very likely it was selected as a Balkan endemic species (only *E. rhodopensis* and *E. orientalis* are endemic taxa on species level in Bulgaria) although it is sufficiently abundant in all parts of its range in the country (Central Balkan Range, Rila Mts and Pirin Mts).

Three more species among the butterflies (Papilionoidea) are typical representatives of the high-mountain fauna of the National Park. These are:

***Lycaena candens leonhardi* (Fruhstorfer, 1917)** - a Balkan endemic subspecies (Lycaenidae); recorded near Dermenka Chalet (1500 m, 17.7.1995, 1 male and 1 female in copula) and known from the area between Vasil Levski Chalet, Ray Chalet and Botev Peak; with low abundance;

***Boloria (Proclossiana) eunomia* (Esper, 1800)** - a glacial relict with boreoalpine distribution (Nymphalidae: Heliconiinae); published from the area between Levski, Botev and Chafadaritsa peaks; a very vulnerable and rare species occurring on the Balkan Peninsula only in this area, with the nearest locality Šumava Mts in the Czech Republic; it must be declared as a protected species in Bulgaria; already protected in Belgium and France, recognized as threatened in the Czech Republic; according to NÈVE (1996) the population in Central Balkan represents a distinct, yet undescribed subspecies;

***Coenonympha rhodopensis* Elwes, 1900** - a common species (Nymphalidae: Satyrinae); collected on Karchov Preslap, 1450 m, 20.7.1995, Ushite Peak, 1600 m, 20.7.1995, Orlovo Gnezdo Shelter, 1500 m, 18.7.1995, Dermenka Chalet, 1500 m, 17.7.1995, Zhaltets Peak, 1800 m, 18.7.1996, Mlechnia Chal, 1900 m, 18.7.1996, Botev Shelter, 2000 m, 18.7.1996, Rosovatets Peak, 1850 m, 25.7.1996, Valcha Glava Peak, 1650 m, 25.7.1996; occurs in great numbers, not threatened.

References

- ABADJIEV S. 1993. Butterflies of Bulgaria. Part 2. Nymphalidae: Libytheinae & Satyrinae. Sofia, Veron Publ. 127 p.
- ABADJIEV S. 1995. Butterflies of Bulgaria. Volume 3. Nymphalidae: Apaturinae & Nymphalinae. Sofia, Publ.: S. Abadjiev. 159 p.
- BESHKOV S. 1992. Faunistic advances on Bulgarian Lepidoptera. - Boll. Ass. Romana Entomol., **46**: 37-56.
- BESHKOV S. 1995. A contribution to the knowledge of the Bulgarian Lepidoptera fauna (Lepidoptera: Macrolepidoptera). - Phegea, **23** (4): 201-218.
- BESHKOV S. 1996. A new subspecies of *Erebia cassioides* (Reiner & Hohenwarth, 1792) from Bulgaria: *Erebia cassioides kinoshitai* ssp. n. (Lepidoptera: Nymphalidae: Satyrinae). - Phegea, **24** (3): 109-124.

- BINDER A. 1933. Schmetterlingsjagd auf dem Balkan (Sommer 1932). - Int. Ent. Zeitschr., **27** (30): 335-339, (31): 349-351.
- BURESCH I. 1921. Neue und seltene Schmetterlingsarten aus Trazien und Mazedonien. - Zeitschr. Bulg. Akad. Wiss., **23**: 155-216. (In Bulgarian).
- BURESCH I., A. POPOV. 1965. Butterflies under protection of the Decree for the conservation of nature in Bulgaria. - Priroda, **14** (3): 60-66. (In Bulgarian).
- BURESCH I., K. TULESCHKOW. 1929. Die horizontale Verbreitung der Schmetterlinge (Lepidoptera) in Bulgarien. - Mitt. Königl. naturwiss. Inst. Sofia, Bulgarien, **2**: 145-250. (In Bulgarian).
- DRENOWSKI A. 1909. Beitrag zur Lepidopteren-Fauna des höchsten Teils des Zentral-Balkans (Stara-Planina) in Bulgarien. - Ent. Rundschau, **26** (20): 120-121, (21): 127-128.
- DRENOWSKI A. 1912. Zweiter Beitrag zur Lepidopteren-Fauna des höchsten Teiles des Zentral-Balkans (Stara-Planina) in Bulgarien. - Zeitschr. wiss. Insektenbiol., **8** (10): 309-313, (11): 340-344, (12): 367-371.
- DRENOWSKI A. 1923. Über einige neue Lepidopterenformen aus Bulgarien und Mazedonien. - Trav. Soc. bulg. sci. natur., **10**: 181-192. (In Bulgarian).
- DRENOWSKI A. 1925. Die vertikale Verteilung der Lepidopteren in den Hochgebirgen Bulgariens. - Deutsche ent. Zeitschr., **1925** (1): 29-75, (2): 97-125.
- DRENOWSKI A. 1928. Die Lepidopterenfauna auf den Hochgebirgen Bulgariens. - Recueil Acad. Bulg. Sci., Classe Sci. Nat. Math., **23**: 1-120. (In Bulgarian).
- DRENOWSKI A. 1929. Über die Lepidopteren-Formationen in den Hochgebirgen Bulgariens. - Deutsche ent. Zeitschr., **1929** (2): 129-140.
- DRENOWSKI A. 1932. Ein vergleichender Übersicht der Bergschmetterlings-Fauna auf den Hochgebirgen Bulgariens. - Mitt. Bulg. ent. Ges. Sofia, **7**: 31-55. (In Bulgarian).
- FRANKE F. 1989. Ergebnis einer Makrolepidopterenaufsammlung in Bulgarien im Jahre 1985. - Mitt. Int. ent. Ver., **13** (3-4): 133-154.
- GOLTZ H. 1930. Neue Erebiensformen. - Deutsche ent. Zeitschr. Iris, **44**: 78-82.
- HIGGINS L., N. RILEY. 1970. A field guide to the butterflies of Britain and Europe. London, Collins. 380 p.
- IWANOV K. 1926. Beitrag zur Schmetterlingsfauna der Umgebung von Lowetsch und des Trojan-Balkans (Bulgarien). - Mitt. Bulg. ent. Ges. Sofia, **3**: 211-224. (In Bulgarian).
- LORKOVIC Z. 1957. Die Speziationsstufen in der *Erebia tyndarus* Gruppe. I. Die morphologischen, ökologischen und chorologischen Merkmale der alpinen Formen *cas-ioides*, *nivalis*, *tyndarus* und *calcarius*. - Biol. Glasnik, **10** (1-2): 61-110.
- NÈVE G. 1996. Dispersion chez une espèce à habitat fragmenté *Proclissiana eunomia* (Lepidoptera, Nymphalidae). Louvain-la-Neuve, Univ. cathol. Louvain, Fac. Sci., Dép. Biol., Unité Écol. Biogéogr. 128 p.
- REBEL H. 1903. Studien über die Lepidopterenfauna der Balkanländer. I. Teil. Bulgarien und Ostrumelien. - Ann. k. k. naturhist. Hofmus., **18** (2-3): 123-347.
- REBEL H. 1904. Studien über die Lepidopterenfauna der Balkanländer. II. Teil. Bosnien und Herzegowina. - Ann. k. k. naturhist. Hofmus., **19** (2-3): 97-377.
- SLABY O. 1979. *Erebia medusa botevi* n. subsp. und *Erebia oeme* in den Gebirgen von Bulgarien (Lep.: Satyridae). - Ent. Zeitschr., **89** (8): 81-88.
- THOMAS P. 1936. Bulgarian Rhopalocera, June and July, 1933. - The Entomologist, **69** (876): 101-103, (877): 136-139.
- TOLMAN T. 1997. Butterflies of Britain & Europe. Collins Field Guide. London, Harper Collins Publ. 320 p.

- VARGA Z. 1972. Die Erebien (Lep.: Satyridae) der Balkanhalbinsel und der Karpaten. II. Die Verbreitung und subspezifische Gliederung von *Erebia epiphron* Knoch, 1783 mit Beschreibung einer neuen Unterart: *E. epiphron infernalis* ssp. nova. - Acta Biol. Debrecina, **9** [1971]: 221-226.
- VARGA Z. 1977. Verbreitung und subspezifische Gliederung der *Erebia ottomana* Herrich-Schäffer, 1847 (Lep.: Satyridae) nebst Beschreibung der beiden neuen Subspezies: *E. ottomana lorkoviciana* und *E. ottomana drenovskyi*. - Különlenyomat a Deri Muzeum, **1976**: 5-16.
- VARGA Z., A. SLIVOV. 1977. Beitrag zur Kenntnis der Lepidopterenfauna der Hochgebirgen in Bulgarien. - In: Terrestrial fauna of Bulgaria. Materials. Sofia, Publ. House Bulg. Acad. Sci., 167-190.
- WARREN B. 1936. Monograph of the genus *Erebia*. London, Brit. Mus. (Natur. Hist.), 407 p.

Received on 11.5.1998

Author's address:

Dr Alexi Popov

National Museum of Natural History

1, Tzar Osvoboditel Blvd

1000 Sofia, Bulgaria

Род *Erebia* (Lepidoptera: Nymphalidae) в Националния парк Централен Балкан

Алекси ПОПОВ

(Резюме)

Видовете от род *Erebia* дават характерен облик на високотланската фауна и са най-типичните нейни представители от дневните пеперуди. В Националния парк Централен Балкан са установени 12 вида, като 11 от тях са представени в оригиналния материал. Общо са определени или ревизирани 288 екземпляра, събирани лично в продължение на две години в безлесната високотланска зона на националния парк или съхранени в колекциите на Н. Карножицки и г-р Ст. Бочаров в Националния природонаучен музей. Посочени са и литературните данни за находищата, надморската височина и погвидовата принадлежност.

За първи път се съобщават от парка 5 вида за Троянската планина и 4 вида за Златишко-Темевенската планина. Разширяват се познанията за ареалите в западна посока на *E. rhodopensis* (го вр. Левски), *E. alberganus phorcys* (го Трионите), *E. orientalis orientalis* и *E. medusa psodea* (го вр. Вежен), *E. euryale euryale* (го хижа Бенковски) и *E. ottomana balcanica* (го хижа Паскал) и в източна посока на *E. rhodopensis* (го вр. Росоватец), *E. melas schawerdae* (го вр. Мазалат), *E. euryale euryale*, *E. aethiops aethiops* и *E. medusa psodea* (го хижа Мазалат). Общо от Златишко-Темевенската планина са известни 4 вида, от Троянската планина - 8 вида и от Калоферската планина - всичките 12 вида. В Стара планина едновременно в границите на парка са установени 7 вида. Познанията за вертикалното разпространение на повечето видове са изменени в неголяма степен в двете посоки. Ареалите само на 2 вида са изцяло под 2000 м, а на 7 вида достигат до 2300 м. Установени са най-ранни гати на летежа в България на *E. rhodopensis* и *E. cassioides* и най-късни гати на *E. cassioides*, *E. medusa* и *E. alberganus*. Погвидовата принадлежност на *E. medusa* и *E. melas* е интерпретирана различно в сравнение с новата българска лепидоптерологична литература.

За първи път у нас е разгледан консервационният статус на видовете от род *Erebia*. С ниска популационна плътност и ограничена разпространеност се характеризират *E. oeme spodia*, *E. orientalis orientalis* и *E. aethiops aethiops*, а в по-малка степен и *E. pronoe fruhstorferi* и *E. melas schawerdae*. Още три вида групи дневни пеперуди в парка са типични представители на високотланската фауна: *Lycena candens leonhardi* (балкански ендемит, с ниска плътност), *Boloria eunomia* (гладциален реликт, силно уязвим рядък вид) и *Coenonympha rhodopensis* (незастрашен обикновен вид).